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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/633,927	08/04/2003	Ryu Yokoyama	P/1909-163	4959

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EXAMINER	
DIACOU, ARI M	

ART UNIT	PAPER NUMBER
3663	

DATE MAILED: 11/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/633,927	YOKOYAMA, RYU	
	Examiner	Art Unit	
	Ari M. Diacou	3663	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 August 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *11-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8-4-2006 has been entered.

Response to Arguments

2. On page 26 of the remarks filed 8-4-2006, applicant argued the art used in the rejection of the claims do not teach the determination of:

A. "the number of light sources for Raman amplification not having spare pumping sources"

B. "the number of light sources for Raman amplification not having spare pumping light sources, intervening between two light sources for Raman amplification having spare pumping light sources, by a permissible failure rate of the optical transmission system."

3. Argument A is unconvincing, the claim does not claim how many spares there are quantitatively, it merely says "a number of said second light sources not having spare pumping light sources," meaning that ***some*** second pumps don't have spares.

Pederson teaches in [¶ 0019] "at least one spare pump source" thus teaching that ***some*** pumps don't have spares.

4. Argument B is unconvincing, neither the claims nor the specification say how to specifically determine the ratio of the number of spares to the number of pumps. Furthermore, when anyone decides to employ redundancy, the quantity of redundancy is always based on the cost of redundancy, the cost of failure without redundancy and the person's estimation of the failure rate of the device. Each car typically has only one spare tire, because the cost of a spare is high, and the cost of being without a spare is very high, but the expected rate of failure is low. However, people typically keep more than one sponge or AA battery in their house because cost of a spare is low, and the expected rate of failure is high.

5. Additionally, argument B is unconvincing because Namiki already teaches with his equation that other pumps can compensate for adjacent pumps failing. Therefore Namiki teaches that not every pump needs to have its own spare, and that total redundancy is superfluous. From Pederson's teaching of "at least one spare pump source", and Namiki's equation, one of skill in the art could have optimized the ratio of spares to pumps.

Specification

6. The amendment filed 8-4-2006 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material

which is not supported by the original disclosure is as follows (page references are made to the specification amendment of 8-4-2006):

- Deteriorated → abnormal. [pg. 8, 9]
- Recovered → corrected [pg. 10]
- Compensated → corrected [pg. 8, 9]
- Consists of → includes [pg. 13]
- By the operation like that mentioned above → by an operation similar to that mentioned above [pg. 10]
- In the on page 16 and the last sentence of page 14 , the mention of source has been changed from singular to plural.

It is the examiner's conclusion that these amendments broaden the scope of the disclosure. Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. Claims 11-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Namiki et al. (USPAP No. 2002/0167719) in view of Pederson et al. (USPAP No. 2001/0050802), Lauder et al. (USPAP No. 2002/0109896), and Hempstead (USPAP No. 2001/0118447).

- Regarding claims 11, and 16, as best understood by the examiner, Namiki discloses an optical amplification method in an optical transmission system, including a plurality of first light sources for Raman amplification that amplify

signal light transmitted in said optical transmission line and a plurality of second light sources for Raman amplification that are disposed at the positions adjoining respective ones of said plurality of first light sources for Raman amplification via said optical transmission line, comprising the steps of:

- amplifying said signal light by said first and second light sources for Raman amplification; [¶ 0098]
- transmitting said amplified signal light through said optical transmission line;
- detecting a deteriorated state of said signal light amplified by one or more of said first and/or second light sources for Raman amplification; and [¶ 0114]

But fails to disclose:

- providing one or more spare pumping light sources for said plurality of second light sources for Raman amplification, the number of said spare pumping light sources being less than the number of said second light sources, [this is effectively saying that some pumps don't have spares, Pederson teaches in [¶ 0019] "at least one spare pump source" thus teaching that some pumps don't have spares.]
- a number of said second light sources not having spare pumping light sources, intervening between two of said second light sources having spare pumping light sources, being determined by a permissible failure rate of the optical transmission system; [the number of spares in any

redundant system is determined by the permissible failure rate of the system, see response to arguments above.]

- restoring said deteriorated signal light to an un-deteriorated state by emitting spare pumping light from a spare pumping light from at least of said spare pumping light sources.
- spare pumping light sources being operated only when required to restore deteriorated signal light.

However it is well known in the art (Abstract of Pederson, Lauder [¶ 0006] [¶ 00021], and Hempstead [¶ 0014-0016]) to use spare pumping lights in a Raman amplifier and turn them on when a primary pumping light becomes defective. These spare pumps would be easily compatible with the control method of Namiki. Therefore, it would have been obvious to one skilled in the art (e.g. an optical engineer) at the time the invention was made, to provide spare pumping lights in the invention of Nimiki, and turn them on when a primary pump caused a deteriorated state in the amplifier output, for the advantage of continued amplifier operation in the case of all primary pumps failing.

- Regarding claim 12, Namiki discloses an optical amplification method in an optical transmission system in accordance with claim 11, wherein: responsive to a deteriorated state of said amplified signal light, said spare pumping light is emitted from said spare pumping light source so that the output level of said signal light becomes the same output level before said deterioration. [Namiki, ¶ 0103]

- Regarding claim 13, Namiki discloses an optical amplification method in an optical transmission system in accordance with claim 11, wherein: responsive to a deteriorated state of said amplified signal light, said spare pumping light is emitted from said spare pumping light source so that the gain wavelength characteristic of said signal light becomes the same gain wavelength characteristic before said deterioration. [Namiki, ¶ 0103]
- Regarding claim 15, Namiki, Hempstead, Lauder and Pederson disclose an optical amplification method in an optical transmission system in accordance with claim 11, wherein: outputs from said pumping light source and said spare pumping light source are controlled by respective control circuits in said one or more first and second light sources for Raman amplification. [Namiki ¶ 0103]

11. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Namiki in view of Pedersen, Hempstead and Lauder as applied to claim 11 above. Namiki, Pedersen, Hempstead and Lauder disclose the invention with all the limitations of claim 11 above, but in addition Pedersen teaches:

- said first and second light sources emit light at respective first and second wavelengths, and at least one spare pumping light for each of said first and second wavelengths. [Abstract]

Therefore, it would have been obvious to one skilled in the art (e.g. an optical engineer) at the time the invention was made, to provide at least one spare pump light for each pump light, for the advantage of retaining normal operation in the event of a total failure of every primary pump light source.

Conclusion

12. The references made herein are done so for the convenience of the applicant. They are in no way intended to be limiting. The prior art should be considered in its entirety.

13. The prior art which is cited but not relied upon is considered pertinent to applicant's disclosure.

14. As to limitations which are considered to be inherent in a reference, note the case law of In re Ludtke, 169 U.S.P.Q. 563; In re Swinehart, 169 U.S.P.Q. 226; In re Fitzgerald, 205 U.S.P.Q. 594; In re Best et al, 195 U.S.P.Q. 430; and In re Brown, 173 U.S.P.Q. 685, 688.

15. While patent drawings are not drawn to scale, relationships clearly shown in the drawings of a reference patent cannot be disregarded in determining the patentability of claims. See In re Mraz, 59 CCPA 866, 455 F.2d 1069, 173 USPQ 25 (1972).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ari M. Diacou whose telephone number is (571) 272-5591. The examiner can normally be reached on Monday - Friday, 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jack Keith can be reached on (571) 272-6878. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

AMD 11/2/2006

JACK KEITH
SUPERVISORY PATENT EXAMINER